PTO 08-5493

CC = CN
20011017
A
1317283

DISPOSABLE CHOPSTICKS MADE OF DEGRADABLE PLANT MATERIALS

[Yi ci xing ke jian jie zhi wu cai liao can kuai]

Guoding Wu

UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. JUNE 2008
TRANSLATED BY: THE MCELROY TRANSLATION COMPANY

PUBLICATION COUNTRY	(19):	CN
DOCUMENT NUMBER	(11):	1317283
DOCUMENT KIND	(12):	A
PUBLICATION DATE	(43):	20011017
APPLICATION NUMBER	(21):	01106696.2
APPLICATION DATE	(22):	20010511
INTERNATIONAL CLASSIFICATION[7]	(51):	A 47 G 21/10
INVENTOR	(72):	Guoding Wu
APPLICANT	(71):	Guoding Wu
TITLE	(54):	DISPOSABLE CHOPSTICKS MADE OF DEGRADABLE PLANT MATERIALS
FOREIGN TITLE	[54A]:	Yi ci xing ke jian jie zhi wu cai liao can kuai

Claims

1. Disposable chopsticks made of degradable plant materials consisting of natural plant fiber as the main material, characterized in that the materials for producing the chopsticks are: plant fibers, starch, water and edible gum, and that the blending ratios by weight of the materials are:

Plant material	50-70%
Starch	0-30%
Water	0-0.5%
Edible gum	18-30%.

2. The disposable chopsticks made of degradable plant materials described in Claim 1, characterized in that said plant material for the chopsticks is selected among grain husks, wheat stems, rice stems or reeds, wood powder or bamboo powder, and that the edible gum is an animal gum or peach gum.

3. A method for producing the chopsticks described in Claim 1, characterized in that the production process includes: screening the materials, pulverizing the screened plant fibers into a powder of 60-100 mesh, followed by adding starch, water and edible gum and mixing to homogeneity, and press-molding the mixture in a mold at pressure of about 200 kg and drying while molding at 130-170°C, and shaping the products, followed by sterilizing with UV by irradiating for 1 min.

4. The method for producing the chopsticks described in Claim 3, characterized by not requiring a coating of water-resisting gum after said homogeneous agitation and primary press-molding.

Description

This invention pertains to disposable tableware; more particularly, it pertains to single-use non-polluting chopsticks of degradable plant materials.

The world is advancing rapidly and the tempo of human daily life is becoming faster and faster, and people are demanding more convenient tableware products. Disposable wooden chopsticks provide extreme convenience to people amid the fast-growing fast food industry, but the negative impact of the vast logging of forests on the ecological environment is at least as serious as the environmental pollution caused by disposable tableware. The fact that developed countries use the disposable chopsticks produced in developing countries without touching their own forests testifies to the seriousness of the adverse impact of large consumption of disposable wooden chopsticks on the environment. Accordingly to national policy, the logging of forests is to be decreased gradually and the portions allocated to producing wooden chopsticks will decrease most significantly. For this reason, the price of the raw materials for wooden chopsticks will increase gradually and the market will shrink due to high cost.

The objective of the present invention lies in providing low-cost, disposable, non-toxic, easily degradable and non-polluting chopsticks of plant materials using agricultural plant refuse as the main materials.

The objective of the present invention is achieved by the following means: Disposable chopsticks made of degradable plant materials consisting of natural plant fibers as the main materials, characterized in that the materials for producing the chopsticks are: plant fibers, starch, water and edible gum, and that the blending ratios by weight of the materials are:

Plant material	50-70%
Starch	0-30%
Water	0-0.5%
Edible gum	18-30%.

Said plant material for the chopsticks is selected from among grain husks, wheat stems, rice stems or reeds, wood powder or bamboo powder, and that the edible gum is an animal gum or peach gum.

The method for producing the chopsticks is characterized in that the production process includes: screening the materials, pulverizing the screened plant fibers (grain husks, wheat stems, rice stems or reeds, wood powder or bamboo powder) into a powder of 60-100 mesh, followed by adding starch, water and edible gum and mixing to homogeneity, and press-molding the mixture in a mold at pressure of about 200 kg and drying while molding at 130-170°C, and shaping the products, followed by sterilizing with UV by irradiating for 1 min and final packaging.

The natural materials utilized as the raw materials for the present invention include more than 100 plant fibers which are low-cost, non-toxic, neutral, acid- and alkali-resistant and easily degradable to nutrient substances for the soil without polluting the environment, while the production process is simple, so that they can be widely utilized in homes and by the fast food industry.

The present invention is further described with the following application examples.

Application Example 1

Material preparation:

70 kg grain husk	35 kg starch	0.7 kg water	34.3 kg peach gum

70 kg grain husk were pulverized into a powder of 80 mesh, and 35 kg starch, 0.7 kg water and 34.3 kg peach gum were added and mixed to homogeneity, followed by press-molding in a mold (pressure 200 kg, 140°C), shaping and sterilizing by UV for 1 min and final packaging.

10,000 pairs of chopsticks were produced from the aforementioned raw materials with plant materials as the key substances, and the cost was 2.5 cents per pair.

Application Example 2

Material preparation:

98 kg bamboo powder 0.7 kg water 41.3 kg animal gum

98 kg bamboo powder were pulverized into a powder of 80 mesh, and 0.7 kg water and 41.3 kg animal gum were added and mixed to homogeneity, followed by press-molding in a mold (pressure 200 kg, 140°C), shaping and sterilizing by UV for 1 min and final packaging.

10,000 pairs of chopsticks were produced from the aforementioned raw materials with plant materials as the key substances, and the cost was 2.3 cents per pair.

Application Example 3

Material preparation:

77 kg rice stems (rice straw)	35 kg starch	28 kg animal gum

77 kg rice stems (rice straw) were pulverized into a powder of 80 mesh, and 35 kg starch and 28 kg animal gum were added and mixed to homogeneity, followed by press-molding in a mold (pressure 200 kg, 140°C), shaping and sterilizing by UV for 1 min and final packaging.

10,000 pairs of chopsticks were produced from the aforementioned raw materials with plant materials as the key substances, and the cost was 2.4 cents per pair.

Flowchart of the entire process: Material screening → pulverizing → agitating → material separation → feeding → thermal compression (disinfection) molding → shaping → sterilizing → packaging.